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This 1967 summary of closed circuit television (CCTV) activities in medical education presents descriptive information on 35 different medical institutions in Great Britain. Specific data on CCTV are offered by institution, equipment, and uses under each medical field: anatomy, anaesthetics, geriatrics, medicine, obstretrics and gynaecology, opthalmology, orthopaedics, paediatrics, pathology, pharmacy and pharmacology, physiology, radiology, therapeutics, surgery and dentistry. Short paragraphs are included with supplementary information on future plans for four of the previous 35 institutions and on three additional medical institutions. (SM)

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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# SUMMARY OF CLOSED CIRCUIT TELEVISION ACTIVITIES IN MEDICAL EDUCATION

EM007163

From the Inter-University Research Unit
& The Asscciation for the Study of
Medical Education

1967

## ANATOMY

| INSTITUTION | EQUIPMENT | USES |
|---|---|---|
| Birmingham University | CCTV in use since 1965.<br>2 valve-operated cameras (Vidi-Aids Ltd.)<br>Mobile control console (E.C.S.Ltd.)<br>Viewing monitors (19" or 23") 625 line<br>Audio talk-back system<br>Distribution: co-axial cables; 8 tutorial rooms linked (one used as temp. studio), demonstration room and labs. Each room has loudspeaker, microphone and small control panel linked to console in temp. studio.<br>Permanent studio: being built in dept. Application for equipment to include facilities for x-ray viewing, screening of large specimens, teleslide, captions and telemicroscope. | Reg. use of 5 hours per wk. (excl. preparation etc.).<br>Teaching of anatomical science to Medical/Dental students and others (viz. orthoptists).<br>Talk-back facilities allow a unique tutorial type of teaching in<br>a) Topographical anatomy.<br>b) Tooth morphology.<br>c) Surface anatomy.<br>d) Radiological anatomy.<br>e) Neuro-anatomy.<br>f) Embryology.<br>g) Micro-anatomy.<br><br>Studio designed for extension of tutorial teaching; for relays of 5-10 min. sections; pre-recorded on V-tape (in Univ. Central Studio) and for relays to dissecting room as aid to group instruction. |
| Leeds University | Medical School TV unit. | Regularly used for teaching and live demonstrations in Practical Neurology. |
| Manchester University | No department plans for acquiring CCTV equipment until colour TV is available; uses University Television Service. | In favour of installing x-ray image intensifier and CCTV equipment when new Medical School is built. |
| Newcastle-upon-Tyne-University | Fixed Epsylon camera unit with Peto Scott and Epsylon monitors. Propose to collaborate with Radiology Department in using video-tape. Serviced by Dept. of Photography. | Regular use in teaching Topographical Anatomy to medical undergraduates and physiotherapy students. For teaching Radiographical Anatomy.<br>CCTV of value in teaching skeletal anatomy; gives excellent definition; allows a large number of students to see small and intricate specimens while examining their own material.<br>Of less value for demonstrating larger specimens or for teaching histology (microscopic slide projector gives better definition). |

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| Oxford University | CCTV installation by Siemens Halsky (Germany); 625 line. Monitoring in Electron Microscope rooms for display in a lecture theatre. | Transmit electron microscope pictures to a wider academic audience. Consider colour TV of value for teaching histology. Hope to have CCTV with Radcliffe Infirmary to relay live surgery, postmortems, etc. to students or research audiences. |
| Guy's Hospital Medical School, London | Some obsolescent ex-BBC equipment--colour TV. Have been recently confined to using black and white TV. | Experiments in colour television for nearly 7 years in co-operation with BBC and Marconi Company. High costs prevented continuation of scheme. |
| Middlesex Hospital Medical School | Marconi equipment with co-axial cable on a special ring system. 625 line. | In regular use for demon-strations and research. |
| St.Mary's Hospital Medical School, London | CCTV on loan. TV camera installed in Post-mortem Room; relay to theatre downstairs; two-way sound enabled feedback by students. Photographic Dept. provides central services to all depts. in Medical School and Hospital. | For trial purposes: use as a magnifying instrument e.g. in Anatomy. Also experimented in relaying autopsy demonstrations. Considered possibility of installing a CCTV unit (at least 2 cameras) with full control equipment. |
| | ANAESTHETICS | |
| Leeds University | Use Central Studio and mobile facilities of the University TV Service including Ampex 650 VTR. | Demonstrations of equipment and chromatograph techniques. (Live and recorded). |
| | GERIATRICS | |
| Glasgow University | Use VTR facilities of the University TV Service. | Case histories of several elderly patients have been recorded in their homes and in hospital; these include observations of patients, of interviews with them and their relatives by social workers, etc.; for use in teaching Geriatric Medicine. |

## MEDICINE

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| Aberdeen University Dept. of Medical Physics | Pye: 625 line. New network being installed for return of information from central monitor room to operating theatres. | Investigating application to image intensifiers in radio-isotope scanning and diagnostic radiology for digital information as well as display. Better demonstration in M.P.Lecture Room. Plans for considerable extensions of use in Hospital and Medical School through linking buildings. Will use videotape recording for tutorial and demonstration work. |
| Royal Infirmary, Edinburgh | Cinelex image intensifier 17" monitors (2 in Catheter room and 1 in Seminar Room). | Relay of clinical investigation. |
| Birmingham University Medical School | Proposal to incorporate a studio within the Audio-Visual Aids Unit, to be built as part of Medical School extension. Will include studio control room, servicing workshop and equipment workshop. | Audio-Visual Aids Centre would have Director and Assistant Director, in charge of facilities for processing still films, making slides, film editing etc. |
| Leeds University Dept. of Medical Physics | TV used with image intensification. Ampex 1550 VTR. | Regularly used for Diagnostic Radiological examinations. |
| Glasgow University Faculty of Medicine | Mark IV Pye industrial vidicons, Marconi V322 A & B, Marconi 3020 cameras, Philips VTR's: 625 line. Distribution: most University departments will shortly be linked to Television Centre. Medical depts. in Western Infirmary will also be linked to this system. | Recording and reproduction of recordings done on site; some departments make use of Mobile TV Unit of University Television Service. |
| Liverpool University Medical Faculty | No TV equipment but have been able to make use of equipment in the existing teaching Hospital. | Such uses that have taken place have been in Clinical Medicine only. |
| Royal Victoria Infirmary, Newcastle | Use TV facilities of the Dept. of Photography, University of Newcastle. TV with image intensifiers for Radiology. Used extensively in X-ray Dept. | Occasional demonstrations. Would be of value for post-graduate work to have Regional Hospitals linked to Medical School. |

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| Oxford University, Dept. of Clinical Medicine, (Radcliffe Infirmary) | Orthicon camera used with De Oude Delft image intensifier. | For research only, in gastro intestinal mobility research. |
| Medical Research, (Nuffield Institute) Oxford. | CCTV used with 'Cinelex' x-ray image intensifier (De Oude Delft).<br>Also experience with image intensifier television.<br>Fluoroscopy equipment by Philips and Siemens. | Fo image intensification purposes.<br><br>Equipment used in Hospital.<br><br>No plans at present for expanding use of CCTV because of expense. |
| Dept. of Medical Illustration, (Radcliffe Infirmary), Oxford. | CCTV is planned for the new lecture theatre of the Infirmary. | Department is gradually expanding and may eventually be responsible for cataloguing and storing of available material. |
| London Hospital Medical College | New Dental School is suited to the use of CCTV and discussions are in progress upon type of equipment and the best method of installation. | Consider that colour TV would be of value for clinical demonstrations both in Medical and Dental School. |
| Middlesex Hospital Medical School | Proposes a CCTV link with the Central Middlesex Hospital nine miles away where some students receive part of their training. Intend to build up a small library of video-tape recordings: presently some recordings are being made of certain demonstrations for repeat. The Medical School took part in a CCTV demonstration organised by the Royal Free Hospital School of Medicine. | |
| St. George's Hospital Medical School, London | TV with x-ray image intensifiers. Considering CCTV equipment and would like to make use of video-tape for recording material. | For cardiography.<br>Hope to make a start with black and white TV for use in operating theatres and in the mortuaries. |
| Westminster Hospital, Medical School. Dept. of Medical Illustration | Simple CCTV camera chain. EMI transistorized camera; simple sound link; 2 monitors (8" and 23"); 625 line.<br>Have provided for links between X-Ray Diagnostic Dept., Experimental Surgery Theatre Suite, this Dept. and teaching area in new building. | Unit can be arranged for local displays as required. Limited use at present pending transfer of several departments into a new building.<br>Use x-ray image intensifiers with TV and this installation will be extended in the new building. |
| Welsh National School of Medicine (see under Surgery) | | |

## OBSTETRICS & GYNAECOLOGY

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| Maternity Hospital, Birmingham | Plans for internal CCTV system. | Wishes to co-operate with University in using facilities for 'teaching purposes'. |
| Newcastle-upon-Tyne University, Dept. of Midwifery & Gynaecology | Use TV facilities of the Dept. of Photography. | For demonstrations on human reproduction and used by anatomists. Considers that colour TV would be of value particularly to clinical observations. |
| Oxford University (Radcliffe Infirmary) | CCTV colour equipment supplied by Smith, Kline & French.<br>Have considered new facilities planned for new building in 1970. | Occasional use for demonstrations of operative techniques to scientific meetings. |
| Institute of Obstetrics & Gynaecology, London (Chelsea Hospital) | Pye Lynx vidicon camera and 4 monitors (14"). | Demonstrations of operations. |

## OPTHALMOLOGY

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| Newcastle-upon-Tyne University | Grundig equipment: 625 line. 2 screens (27" and 23");<br>Hanimex tele-lens.<br>Used VTR (University Unit). | For teaching surgical opthalmic procedures; for postgraduate meetings and demonstrations.<br>Video-tape recordings of surgical procedures subsequently used to illustrate lectures. |
| Moorfields Eye Hospital | Pye camera on boom mounted upon portable trolley with control panel. 625 line. Relay to Postgraduate Lecture Room and also to Nursing School, with talk-back facilities.<br>4 new theatres being built in City Road, which are being wired for CCTV: propose to have permanent cameras in each theatre for demonstration/observation, as well as fixed ones for microscopic work. | For transmitting eye operations to<br>a) junior surgeons.<br>b) School of Nursing.<br>c) special consultants' conferences.<br>Can also use as a fixed camera for relay of material e.g. documents, diagrams, x-rays etc.<br>Have considered links between City Road, Holborn and the Institute, but expense likely prohibitive. Would thus prefer to have VTR's at each site for recording and playback purposes. |

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| Western Infirmary, Glasgow | Use Mobile Unit of the University TV Service | Videotape material from various hospitals for teaching within University of Teaching Hospital. Lecture-demonstrations to 4th year medical students on Trauma and Orthopaedics (4-wk. course) which included case histories, interviews with patients, demonstrations of artificial limbs and observations of patients learning to use artificial limbs. |
| | PAEDIATRICS | |
| Birmingham University Dept. of Paediatrics & Child Health | Institute of Child Health have plans for a CCTV unit. Proposals for a new Centre for Child Psychiatry using 2 cameras and screen. | For observation of patients in playroom and waiting room. |
| Sheffield University (Children's Hospital) | CCTV used in Children's Hospital. No equipment in the Dept. of Child Health. | For showing x-ray screening to the Conference Room. |
| | PATHOLOGY | |
| Glasgow University | CCTV in use in Autopsy Room - fixed camera over dissecting bench: 3 viewing monitors. | For magnification purposes to demonstrate postmortem specimens to undergraduates. Considered a very useful adjunct to teaching. |
| Welsh National School of Medicine (see under Surgery) | | |
| Liverpool University | Envisages CCTV apparatus with one camera for gross specimens and one camera attached to microscope. 2 monitor screens. | To demonstrate to students gross and microscopic pathological changes. |
| Royal Free Hospital School of Medicine | Single TV chain. Dage camera mounted vertically over a microscope and monitor set on trolley. Second camera on display table. No sound facilities necessary. Have used tape recorder to record lectures. | In regular use since 1962 for demonstration purposes in small lecture room or teaching lab. for postgraduate and undergraduate teaching, e.g. pathological histology. Also used equipment for autopsy demonstrations and have experimented with CCTV relay to other institutions.<br>a) Necropsies to clinical student from St.Pancras Mortuary to Hospital.<br>b) Clinico-pathological Conferenc between University College and Middlesex Hospitals, Birmingha Manchester and Newcastle Univ-ersities. (2-way sound avail-able except from Birmingham). |

## PHARMACY & PHARMACOLOGY

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| Welsh College of Advanced Technology, School of Pharmacy | CCTV unit: Pye Mk.IV with Sticon Tube, Dallmeyer lenses. 2 viewing monitors (17") and control monitor. 625 line. | Have been experimenting in telemicro projection for teaching Pharmacognosy. Camera unit has been extended to link laboratorie lecture and preparation rooms in the School. Have plans for further links in College and possibly microwave link between this college and others in the area. |
| Leeds University, Dept. of Pharmacology | Use Medical School TV Unit. | Regular demonstrations (live). |
| Manchester University, Dept. of Pharmacology | Use facilities provided by University Television Services including VTR (Philips EL3440). Colour television is considered of value to show histochemical changes in responses to drugs. | Demonstrations relayed from labs. to lecture and seminar rooms. Use for teaching and research purposes. Videotape recordings made of pharmacological demonstrations. |
| Newcastle-upon-Tyne University, Dept. of Pharmacology | 5 Rank Bush Murphy monitors; Marconi camera V322 in Lecture Theatre. Hope to extend use of television but at present no plans to buy more equipment. | Propose to use during demonstrations for magnification purposes. Intend to videotape at least one demonstration for playback to students for one part of their course. (Equipment co-ordinated and maintained by Photography Dept.). |
| Oxford University, Dept. of Pharmacology | Experiments in using CCTV. | For demonstrations of detail. |
| King's College, London, Dept. of Pharmacology | CCTV. Plan to make use of videotape. | To demonstrate pharmacology to 128 students in a lecture theatre. |
| School of Pharmacy, London | Considering CCTV equipment. | Would be used for demonstration purposes, particularly of microscopic subjects, for teaching undergraduates. |

## PHYSIOLOGY

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| Aberdeen University | Industrial types; 625 line. VTR. | Frequently for lecture demonstrations, demonstrations for apparatu etc. Videotape recordings shown to learned societies. Considering intra-building links and videotape exchanges. |

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| Edinburgh University | Mk.IV Pye industrial camera, transistorized Pye camera, 3 Pye monitors (21") and 1 control monitor. Distribution: co-axial; 625 line. | For teaching in lecture theatre. Magnified image of small field in animal demonstrations. Demonstrations usually to medical students given 2-3 times weekly. Have considered microwave links to departments and hospitals but shelved due to costs involved. |
| Glasgow University | Limited use of CCTV. | For demonstrations of microscopic specimens to large groups. |
| Birmingham University, Dept. of Zoology & Comparative Physiology | Single camera and 23" screen display, transportable for use in various labs. lecture and seminar rooms. Screen height about 4½ ft., viewed by a group of up to 24 seated students. | Magnification of microscopic work, though black and white has limitations for coloured histological preparations. For display of special manipulation, e.g. insertion of microelectrodes into displays and meter readings. |
| Leeds University | Use Medical School TV Unit. | Regularly used in lectures for magnification of specimens and techniques (live). |
| Newcastle-upon-Tyne University | Use Photography Dept. Unit. | Occasional use (10 hours per week) for demonstrations to medical students. Not used in lectures or research. |
| Oxford University | CCTV equipment (Vidi Aida); 24" displays and 5" monitors. 625 line. | For teaching as occasion demands when demonstrating to large classes. Some use made of videotape recordings but limited by costs involved. |
| Sheffield University | Marconi 3 camera unit. 2 valve operated cameras for studio use only--one with zoom lens mounted on overhead track; one with 2 lenses mounted on tripod. 3rd transistorized camera (V3228), 4 lens, fitted with viewfinder and used in labs. Simple Control Unit on trolley; 2 monitors (14") and 7 (21") viewing monitors in labs. Small Studio: links to 2 teaching labs.; relay also to Seminar Room. | Shared jointly with Biochemistry Dept. Demonstrations of equipment relayed to students working at lab. benches. Demonstrations of simple physiological techniques which students subsequently carry out for themselves. Demonstrations of experiments for teaching purposes. As an aid in histological instruction and use as a blackboard. See need for VTR: demonstrations for repeats, record for teaching purposes, to use as inserts into teaching and would help academic staff to improve their TV technique. |
| Middlesex Hospital Medical School | Peto Scott and Philips equipment with co-axial cable. 625 line. | In regular use for demonstrations and research. |

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| Queen Elizabeth's College, London | CCTV | For showing demonstrations to large numbers of students, especially through the expansion of a small cathode-ray tube on to the large TV screen for nerve and muscle demonstrations. |
| | **PSYCHIATRY** | |
| Royal Edinburgh Hospital | 2 Marconi cameras (V322A).<br>Remote Control Unit.<br>Monitors, 625 line.<br>Ampex VTR (VR650).<br>No plans to establish permanent links but would like to exchange videotapes with other units in the country. | For demonstrating psychiatrically ill patients to medical students, psychiatrists in training, nurses etc. VTR used to show experimental work of research workers in the department. |
| Gartnavel Royal Hospital, Glasgow (Clinical Psychiatry) | Use facilities provided by University TV Service.<br>Small office as Studio; one fixed and one mobile camera. Monitor screen in adjacent office; 2 viewing screens in nearby lecture room. | For demonstrations of a wide variety of clinical conditions recorded and shown to 5th year students every other week for 2 terms during 1965-66 and 1966-67 sessions and followed up by tutorial classes led by a psychiatrist.<br>Used twice for demonstrations at a meeting of the Glasgow University Medico-Chirurgical Society for 200 medical students. |
| Eastern Dist. Hospital, Glasgow (Clinical Psychiatry) | Use facilities provided by University TV Service.<br>Regular use of TV since January 1966. | Videotape recordings of psychiatr interviews for playback at appropriate teaching sessions to 5th year medical undergraduates.<br>Research being carried out to evaluate its use.<br>Library of tapes is gradually being amassed for future teaching needs. |
| Birmingham University | 2 inter-switchable cameras. High Fidelity Stereo sound system.<br>Facilities for Monophonic and Stereophonic recording.<br>1 monitor.<br>Will obtain 3rd camera. | Experimenting in use for only about 2-3 hours per week for teaching and postgraduate interviewing.<br>When more equipment is available will use for research work.<br>For close-up work. |
| Leeds University | Use University TV Service Studios and Mobile Unit.<br>Ampex 650 VTR. | Recording of experimental case-studies and interview situations. |
| Sheffield University | CCTV. | For demonstration of cases and of individual psychotherapy for medical students. |

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| Guy's Hospital Medical School, York Clinic (Child Psychiatry) | 2 Marconi cameras (322).<br>Remote Control Panel (British Relay).<br>Ampex 650 VTR.<br>Equipment for use in 2 or 3 rooms as required.<br>Adult Psychiatry also has some equipment. | For interviews and observations of consultations between doctor and patient by medical students. Recordings would be useful for inserts in teaching.<br>Acquired Bolex 1200 for filming CCTV interviews. |
| Institute of Psychiatry, Maudsley Hospital | CCTV unit. 625 line.<br>Ampex VTR (VR7000). | For research purposes. Videotape used to record studies of the interview in psychiatric diagnosis. As part of their research programme, already exchanging material with Columbia University (New York) and also working closely with the Mental Health Unit (World Health Organisation). |
| | PSYCHOLOGY | |
| Edinburgh University, Dept. of Psychology | 1 TV chain in use since 1963. Includes 2 Philips cameras, 2 control monitors (18") and 5 viewing monitors (21")--Ferguson.<br>1 Philips VTR. | For conducting demonstrations with limited specialised apparatus in Experimental Psychology Section. For demonstrations of thought processes of young to large tutorial groups in Child Development Section.<br>For training in 'interviewing techniques' in Vocational Psychology Section. |
| Glasgow University<br>a) Psychological Medicine & Social Studies | CCTV in 3 hospitals. Relays to lecture room from small consulting rooms. | Regular use for relaying and/or recording of psychiatric interviews 4 videotapes have been made suitable for teaching Psychology to 3rd year medical students.<br>a) 2 tapes on features of intelligence testing and examinations of memory disorder in a brain-damaged patient.<br>b) 2 tapes on interviews with special types of patients--drug addicts, delinquents.<br>Also extensive recordings of group therapy sessions which provide material for a sequence of demonstration lessons. |
| b) Psychology Department | Use facilities provided by University Television Service. | A so far limited use which has been directed to recording of test and interview situations; relays to large student audience. Intend to extend application and scope of its use. |
| Birmingham University, Dept. of Psychology (not in Medical Faculty) | None at present.<br>Plans-a specially designed CCTV unit in Honours Lab. 16 cubicles with TV monitors and an auditory intercommunication system. | Would use for simultaneous and standardised presentation of a large range of visual stimuli (instead of psychological apparatus). Also for relays of teaching and demonstrations. |

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| Liverpool University, Dept. of Psychology (in Arts Faculty) | Plans for CCTV in new Department; purchasing Sony VTR. To use 405/625 lines with VTR facilities and a projector system for use in lecture theatre. | For demonstrating interviews and testing both for teaching and research purposes. |
| Oxford Institute, Institute of Experimental Psychology | Plans for large screen, colour, CCTV linking labs. and lecture rooms. | Would use for overflow meetings and for demonstrations. Experimenting with use of videotapes for the teaching of social skills. |
| Sheffield University, Dept. of Psychology | CCTV system: EMI equipment. | For teaching and research purposes. Would like VTR as soon as it can be afforded. |
| Bedford College, London | CCTV in use since 1962. Would have made use of VTR if funds had been available for purchase. | In teaching of child and animal psychology which has enabled students to make systematic observations of behaviour without being present in the room. Also has allowed more systematic training to be given to undergraduates. |
| | RADIOLOGY | |
| Aberdeen Royal Infirmary | Image intensifier and CCTV.<br>VTR (Philips 3400).<br>Screening units have CCTV/ image intensifiers. | Regularly during practical instruction periods in Radiology to undergraduates. Demonstrations of videotape recordings given during systematic lectures. In TV teaching sessions in association with University Dept. of Surgery for Clinico/Radiological/ Pathological Symposia.<br>For postgraduate teaching: for barium and urological work; for cases undergoing vascular investigation.<br>Consider equipment invaluable in teaching trainee Radiologists and envisage videotape recordings will become important in this work. |
| Western Gen. Hospital, Edinburgh (Diagnostic Radiology) | 2 Philips cameras.<br>2 monitors (12"). | Demonstrations of examination in x-ray screening to students or other observers. |
| Royal Infirmary, Edinburgh (Diagnostic Radiology) | NEVCO/EMI TV system. 405 lines, connecting the X-Ray Dept. to the Dept. of Therapeutics.<br>Philips TV chain coupled to Philips VTR.<br>TV chain in Urological Theatre.<br>Philips Bipland TV chain in angiocardiographic | Relaying of x-ray image to teaching rooms.<br>Used for x-ray procedures, recording of image for storage and for teaching.<br>Used for teaching undergraduates.<br>Used for monitoring and for teaching students. |

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| Bristol University, Dept. of Radiology & Radio Diagnosis | TV camera attached to x-ray image intensifier. | Demonstrations to undergraduates, postgraduates and staff. |
| Newcastle-upon-Tyne University | TV with Philips 9.5" image intensifier.<br>Also Serex 7" and EMI television.<br>Philips VTR (original model).<br>Would like to have direct link with operating theatres and certain wards, but funds not available. | For service needs in all fluoroscopic procedures.<br>Videotape used for service and research purposes with 9.5" image intensifier.<br>Would use CCTV link for transmitting radiographic images. |
| Addenbrooke's Hospital, Cambridge (Old Site) | 5 Pye Mk.IV industrial cameras in 2 x-ray and 1 operating theatres, the outputs of which are controlled in the x-ray reporting room; this room acts as a switching centre and also contains cameras for transmitting x-ray film to a monitor in the operating theatre for use by the surgeon. The 5th camera is used for projecting 35mm cine films to the lecture rooms. Talkback facilities available to and from x-ray and operating theatres. | For clinical analysis and teaching purposes. Equipment in use since 1965.<br>Video output from all cameras, with talkback facilities, can be fed to the postgraduate lecture theatre, nurses' lecture theatre and School of Radiography.<br>In 2 x-ray theatres, cameras used with image intensifiers, e.g. for relaying x-ray appearances of a patient in the x-ray theatre to students in lecture theatre. |
| Middlesex Hospital<br>a) Medical School, Dept.of Radiology<br><br>b) Animal House | TV used with x-ray image intensifier.<br><br>X-ray apparatus in operating theatre. | Pictures are relayed from Dept. to the Anatomy Dept. Lecture Theatre.<br><br>For research work. |
| Hammersmith Hospital Postgradyate Medical School | EMI equipment in 3 installations.<br>Vidicon camera used with 9" Mullard image intensifier and fed through a CCTV unit. A 4th installation has 7" Siemens intensifier.<br>625 line. Future scheme dependent upon obtaining a grant. | For clinical purposes.<br>Image intensifiers are used routinely for screen in the X-Ray Dept.<br>Considering the provisions of a large screen projector in large lecture theatre with links to X-Ray and Pathology Depts. to medical and surgical wards and operating theatres; or use of videotape for recordings if links are not possible. |

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| | **THERAPEUTICS** | |
| Royal Infirmary, Edinburgh | TV system (NEVCO). 405 line connected to X-Ray Diagnostic Dept. and Seminar Room. | For teaching from ward and X-Ray Dept. to students in Seminar Room |
| | **SURGERY** | |
| Aberdeen University Medical School | Pye and EMI equipment. 625 line. 1 zoom camera; 1 twin lens camera without zoom but remote control of focus and turret; 2 sync. and control units; 6 monitors; sound recording and amplification. 2 Peto Scott (Philips) VTR-EL3400. Distribution: short distance co-axial cable lines. | CCTV in use since October 1965, mainly for demonstrations of clinical surgery to 3rd/4th/5th year students. TV combined with normal teaching for 3 hours per week, used as visual re-enforcement or illustrations of case presentations and points of discussion by teacher in lecture theatre. Extensive use of pre-recorded material--clinical histories, physical signs and operative surgery; of value in preserving for repeat. Consider that colour TV could have additional value in clinical medicine. |
| Aberdeen Royal Infirmary | CCTV network in original Infirmary buildings. Theatre Suite, X-Ray Suite and the Ward Block (Phase I development) have a recently installed CCTV network. | To provide a relay of surgical work from operating theatres to lecture rooms used by medical undergraduates. A link has been installed between these networks and are also utilised for nurse education. When necessary the transmissions are recorded on film. |
| Edinburgh University Medical School (Clinical Surgery) | X-ray image intensifier coupled to a TV camera. No CCTV facilities as yet available but may have in near future. Was involved in colour CCTV demonstration (1965)--clinical presentations to general practitioners. | For screening purposes during renal tract radiology. Extensive use of films for both undergraduate and postgraduate teaching purposes; makes own films for recording clinical information and for teaching. Audio-tape records made of major symposia and meetings. |
| Western General Hospital, Edinburgh (Surgical Neurology) | Pye Mk.IV camera and image intensifier. Monitors, one in x-ray dept., three in operating theatre. Ampex VR 7003. | Relay of small field to post-graduates in operating theatre. |
| Glasgow University Royal Infirmary, (Clinical Surgery) | Use facilities provided by University Television Service--Mobile TV Unit. | Sept. 1966 teaching of surgery introduced to junior undergraduates at Royal Infirmary to supplement bedside teaching. Recorded on videotape a wide range of clinical conditions, once per week for subsequent teaching use. |

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| Welsh National School of Medicine (Surgery, Medicine & Pathology) | CCTV equipment to be installed in 3 lecture theatres which will include facilities for videotape recording.<br>Proposed CCTV systems would be based in the Dept. of Surgery. | A pilot scheme in progress which is preparatory for plans for the new Medical Teaching Centre, expected to be completed in 1971. Most facilities are used departmentally but the Panel on Visual Aids intend to centralise audio-visual aids from the Dept. of Medical Illustration which is in the main teaching hospital. |
| Sheffield University | None at present. Plan to make extensive use of CCTV: VTR would be used to record clinical material. | For clinical demonstration of individual patients to large groups of students and for the entire instruction in operative surgery--for postgraduates. |
| | DENTAL | |
| Birmingham University Dental School | 2 cameras, 2 monitors and ancillary equipment. | Usage is still experimental. Would like to develop the use of the endoscope with miniature camera for intra-oral use. |
| Leeds University | Use University TV Service resources including Ampex 650 VTR. | Recording of consultations and treatments of patients and close-ups of dental techniques. |
| Manchester University Turner Dental School, Prosthetics | Use facilities provided by University Television Service. Proximity of Dental Hospital to the new TV Studio will probably enable a direct link to be made. | Used during lectures in the depts. of Prosthetics and Pharmacology.<br>Has made use of videotape recordings. |
| Newcastle-upon-Tyne University<br>a) Op.Dental Surgery<br><br>b) Dental Anatomy | 2 cameras each linked to 3 or 4 monitors.<br><br>1 camera (Marconi 322) and 3 monitors. | Audiovisual use for teaching techniques on phantom head.<br><br>For dental histology demonstrations. |
| Guy's Hosp. Medical School Dental Prosthetics | EMI Type 8 CCTV camera.<br><br>Experiments with Marconi 322 type equipment. | In use since 1963 for demonstrating laboratory and clinical procedures to groups of students. Have developed a technique of presentation which permits showin detailed procedures to large groups without the need for repeats.<br>Are convinced that this equipment is suitable for a large number of clinical teaching procedures.<br>If funds available would acquire this equipment with a VTR.<br>All requirements of Hospital and School are likely to be co-ordinated in the future. |

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| Royal Dental Hospital, London, Restorative Dentistry | Pye "Lynx" transistorized camera (type TVC1).<br>2 Pye monitors. | Irregular use for demonstration purposes in the department only. Equipment would be used more frequently if technical assistance was available. Consider colour TV of value for presenting clinical demonstrations on surgical and operative techniques. |

## ADDITIONAL INFORMATION

Aberdeen University Medical Faculty

Mainly departmental developments, the largest single user being Surgery and to some extent Physiology but also co-operation between Hospital and Medical School for teaching by transmission, from theatres to lecture rooms. Hope to link 2 main Hospital buildings and eventually the Medical School and also the Nursing College. Plans to establish microwave or land line links between separate units of University and to have local commercial TV studio facilities mainly for internal University usage but also seek facilities for exchange of recorded material. Has membership within the Scottish Postgraduate group co-operating in scheme for broadcasting medical TV programmes (in operation for past 5 years).

Glasgow University

The University have examined the possibility of linking the main teaching hospitals in Glasgow but it will be a long-term project due to costs involved. Intend to provide self-contained CCTV systems within these hospitals. The use of the Mobile TV Unit and videotape facilities is enabling students to see material collected in many different hospitals and in patients' own homes. Future exchanges of recorded material with institutions outside the University will depend upon the use of mutually compatible machines. The Television Service is acquiring a Philips EL 2770 with this in view.

Dundee University, Medical Faculty

Considerable interest is being shown by the departments in the Faculty in closed circuit television but at present no CCTV is being used for teaching purposes. The new Teaching Hospital and Medical School at Ninewells will be provided with a network of ducting so that when money becomes available and when the precise requirements have been identified, a CCTV system may be installed. Similar arrangements are being incorporated in the new Medical Sciences Institute, Phase I of which may be ready by the Autumn of 1969. Both buildings also contain studio/control room facilities.

Dundee Dental School

At present CCTV is not being used but in March 1967 building began upon a ten-storey tower extension to the Dental Hospital and School which will have CCTV installed in it. Taping will be possible from all demonstration surgeries and demonstration rooms and viewing screens will be installed in all the lecture theatres. Brief experiments have been conducted in the use of CCTV for lecture demonstrations, particularly for the magnification of objects which in dentistry are very small. Consider that colour TV will increase the value of CCTV to a tremendous extent in this field--for the presentation of clinical cases and operative procedures as well as for presenting histological material and demonstrations of a non-clinical nature.

Eastern Regional Hospital Board, Dundee

Four hospitals in this Region use x-ray image intensifiers and some important work on the development of these was carried out at Dundee Royal Infirmary. Videotape is used extensively in the Radiology Department at Dundee Royal Infirmary especially for angiocardiography.
Approval has been given for the installation in the new Ninewells Teaching Hospital and Medical School of conduit and trunking to enable the use of CCTV and sound amplification in various areas. At some future date before or after completion of the building it is hoped to obtain approval to the installation of CCTV.

Birmingham University

Plan to set up a Central Television Service. The Medical School, Department of Anatomy, has already made provisions for a small studio within the department. A similar studio is planned for the Physiology Department. The new Medical School extension includes an Audiovisual Aids Unit with a comprehensively equipped TV studio of intermediate size, a separate control room, workshops, graphics and photographic section. It is intended that the Unit should be in charge of an academic director and will work both in conjunction with the smaller departmental units and with any future centralized University Service.

Leeds University

The Leeds University Television Service has been in full operation since 1965 and provides advice, services and facilities to all departments in the University. The separate unit which has existed in the Medical School since 1962 has now been absorbed into the Central Service, thus enabling the studio resources, as well as those of the mobile and medical units, to be used for live and recorded presentations to and from the Medical School. The Medical School is being linked to the Central University distribution system so that recorded material may be relayed to lecture theatres in the Medical and Dental Schools.

Liverpool University

The Medical Faculty are in the process of setting up a Central Audiovisual Aids Centre. Although at present facilities for using CCTV are limited, with the completion of the new Teaching Hospital, there should be a considerable increase in the amount of equipment available. Almost all departments are interested in its use as a visual aid in teaching students, both in the Faculty and in the School of Dental Surgery, e.g. in Anatomy and Dental Surgery for demonstrations and magnification purposes; in Psychological Medicine and Oto-Rhino-Laryngology for live relays or recordings.

Charing Cross Hospital, London

At present CCTV is used in the X-Ray Department; Operating Theatres; Ward Teaching Rooms, Out-patient Clinics, Pathology and Clinical and Pre-clinical Teaching Departments. An extensive CCTV network (including facilities for colour) is planned for the new hospital building which is now under construction.